

# Actual and Prescribed Energy and Protein Intakes for Very Low Birth Weight Infants: An Observational Study

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## Abstract

“Objectives: To determine (1) whether *prescribed* and *actual* energy and protein intakes during the first two weeks of life met Ziegler’s estimated requirements for Very Low Birth Weight (VLBW) infants, (2) if *actual* energy during the first week of life correlated with time to regain birth weight and reach full enteral nutrition (EN) defined as 100 kcal/kg/day, (3) if growth velocity from time to reach full EN to 36 weeks postmenstrual age (PMA) met Ziegler’s estimated fetal growth velocity, and lastly (4) to examine growth outcomes at 36 weeks PMA.

Study design: Observational study of feeding, early nutrition and growth of 40 VLBW infants  $\leq 30$  weeks GA at birth in three tertiary care newborn intensive care units NICUs).

Results: During the first week of life, the percentages of *actual* energy (69% [65 kcal/kg/day]) and protein (89 % [3.1 g/kg/day kg/day]) were significantly less than theoretical estimated requirements and *actual* intakes were ~ 15% less than *prescribed* due to numerous interruptions and medical nutritional complications in these infants. During the second week, the *actual* intakes of energy (90% [86 kcal/kg/day]) and protein (102% [3.5 g/kg/day]) improved although the differences in *prescribed* and *actual* were consistently 15%. Neither energy nor protein significantly correlated with days to return to birth weight; energy but not protein during the first week was significantly related to time to reach full EN.

Conclusions: Energy and protein intakes of VLBW infants improved over the last decade although they still do not meet theoretical estimated requirements in the first week of life. The *actual* nutrient intakes were consistently less than 15% of the *prescribed* intakes. EUGR at 36 weeks' PMA occurred in about 40% of infants in this study. This rate is lower than in 2001 when 99% of such infants had EUGR at 36 weeks' PMA.